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PCT #2

PATENT

Docket No.: A-71606-1/MSS (463035-870)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

HELMS et al.

Serial No: 10/519,331

Filed: December 22, 2004

Title: *Method for Energy-Assisted Atomic
Layer Deposition and Removal*

Examiner: **To Be Assigned**

Art Unit No: **To Be Assigned**

San Francisco, CA 94111

Date: January 24, 2005

SUBMISSION OF FORMAL DRAWINGS

Commissioner for Patents.

Attention: Official Draftsperson

P.O. Box 1450

Alexandria, VA 22313-1450

Sir:

Enclosed herewith are eleven (11) sheets of formal drawings consisting of Figs. 1-3J for the above-identified patent application.

The Commissioner is authorized to charge any underpayment of fees or credit any overpayment to counsel's Deposit Account No. 50-2319 (A-71606-1/MSS (463035-870)).

Respectfully submitted,

Date: January 24, 2005

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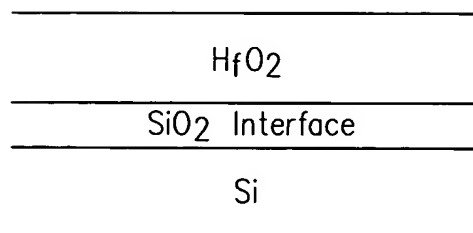


FIG. 1

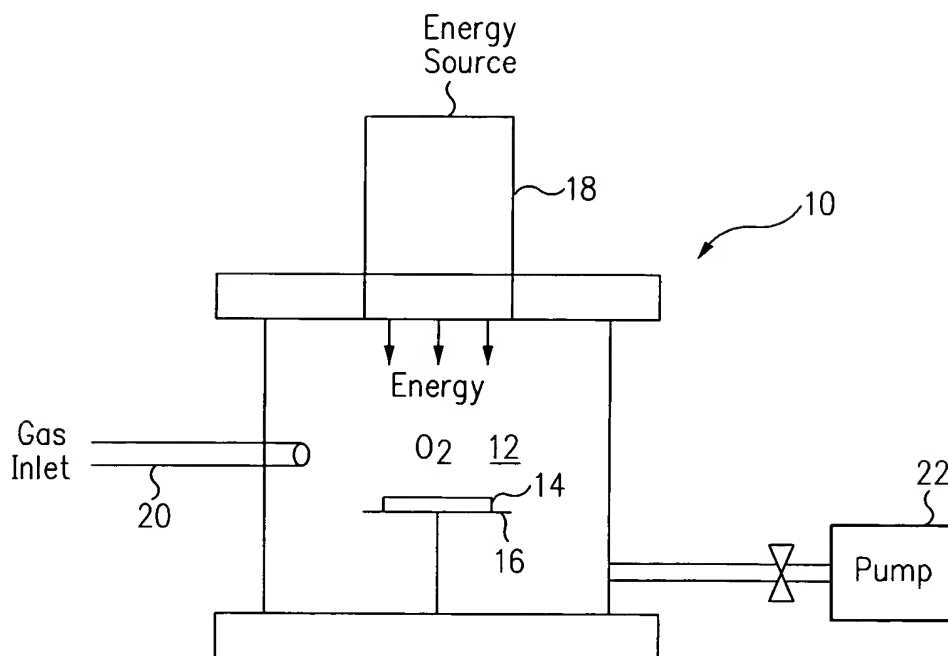


FIG. 2

Atomic Layer Exchange For 5 EOT Gate Dielectric



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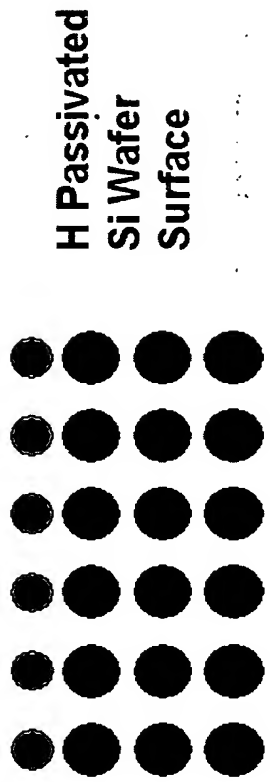
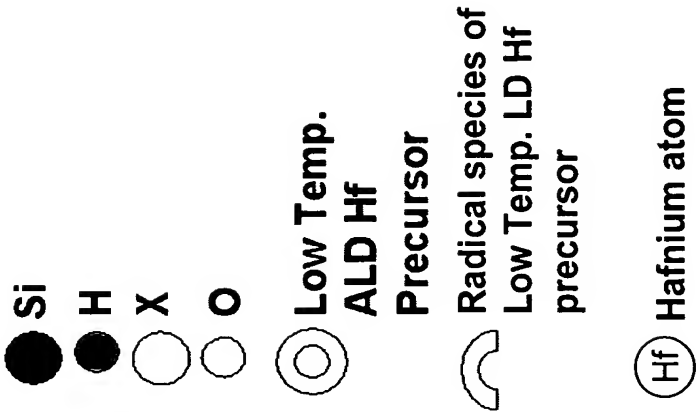


FIG-3A



Atomic Layer Exchange For 5 EOT Gate Dielectric

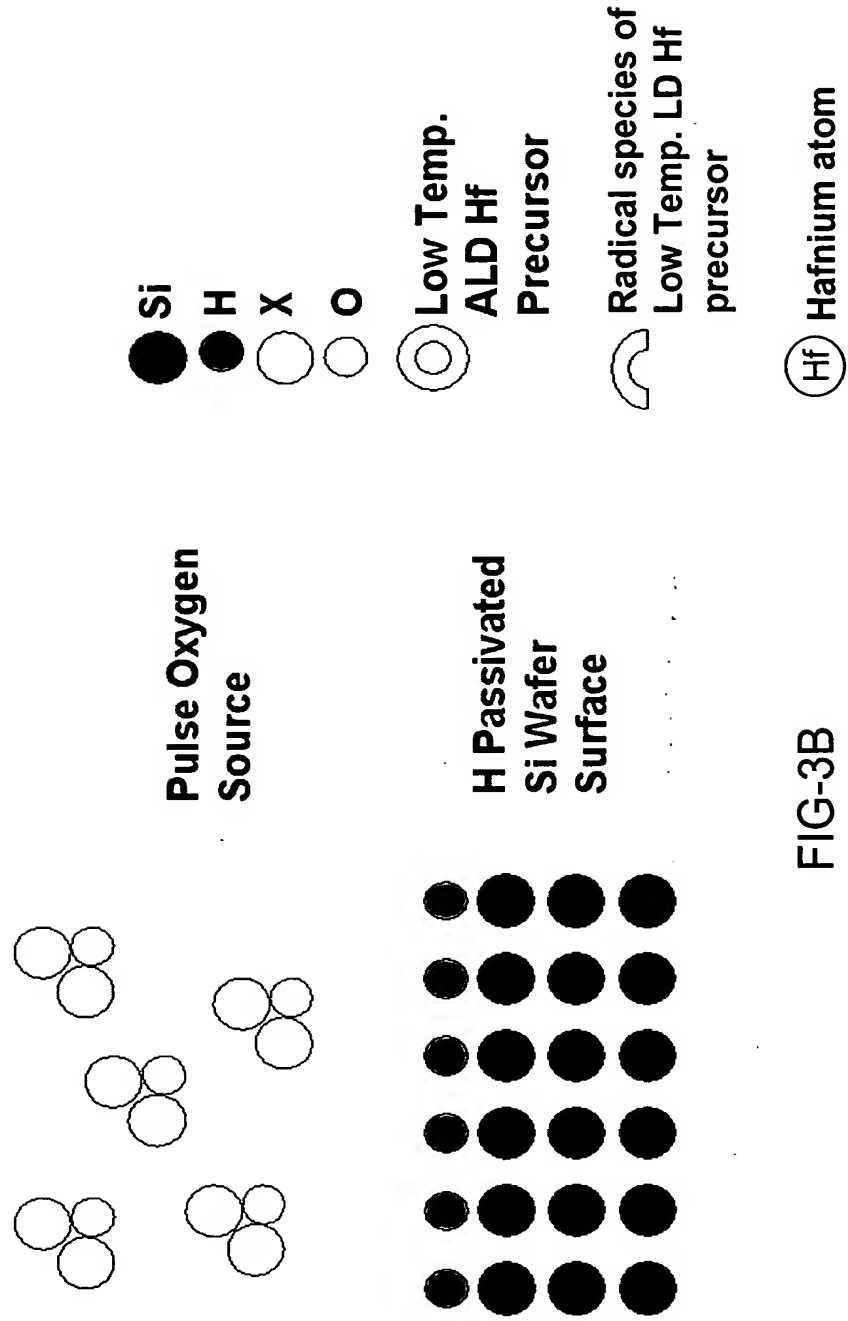


FIG-3B

Atomic Layer Exchange For 5 EOT Gate Dielectric

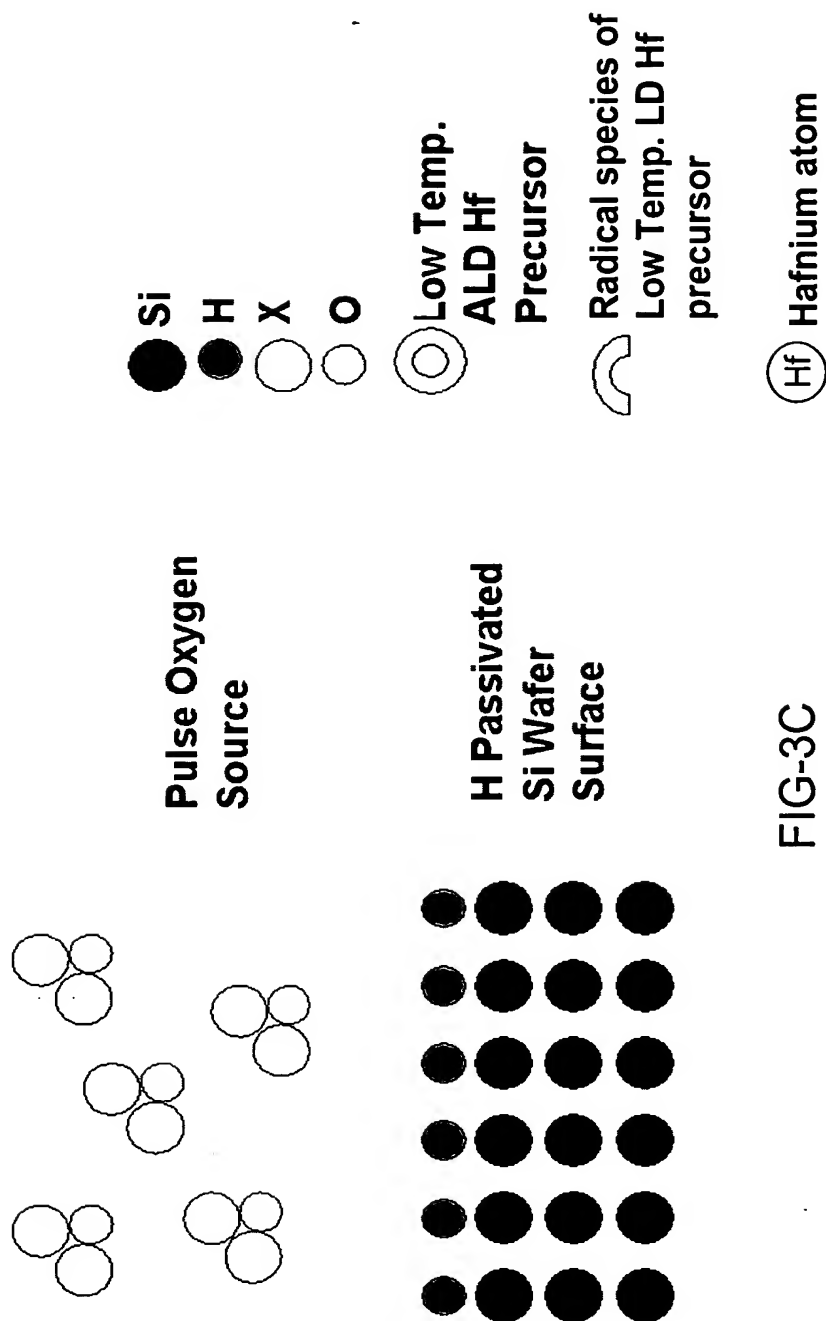


FIG-3C



Atomic Layer Exchange For 5 EOT Gate Dielectric

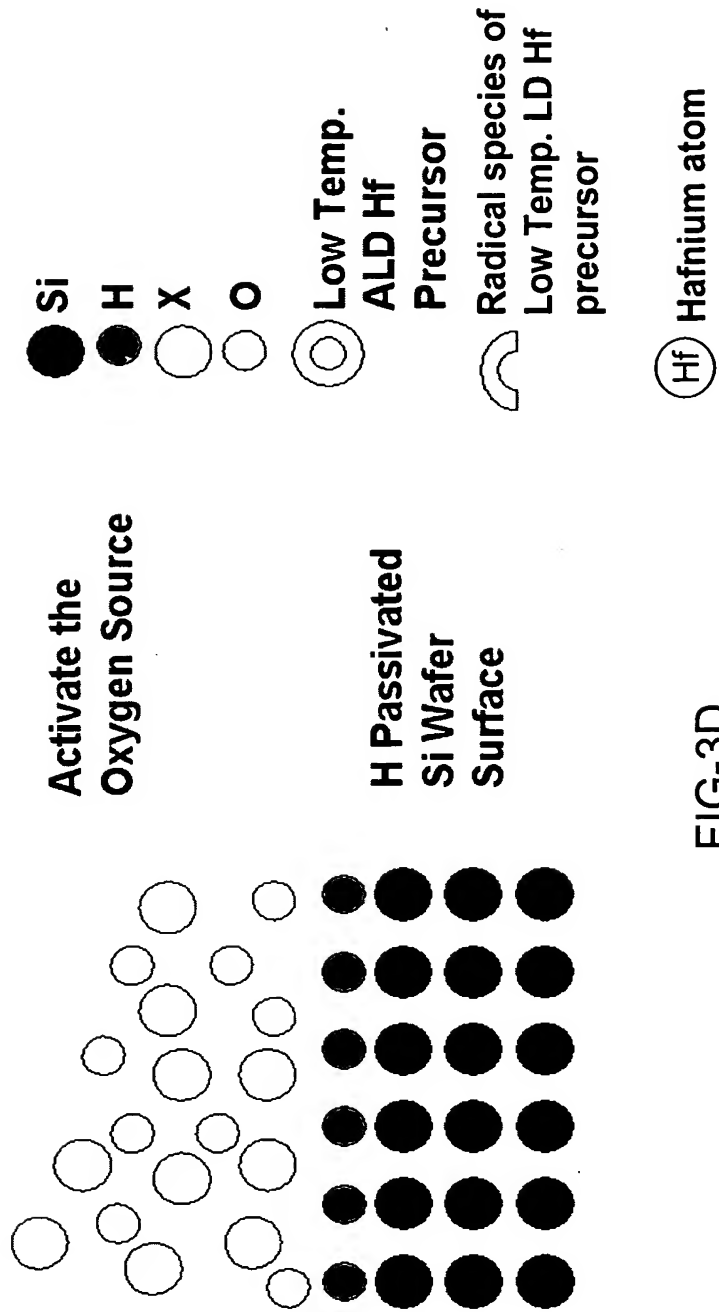


FIG-3D



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Atomic Layer Exchange For 5 EOT Gate Dielectric

Purge

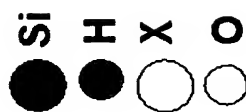
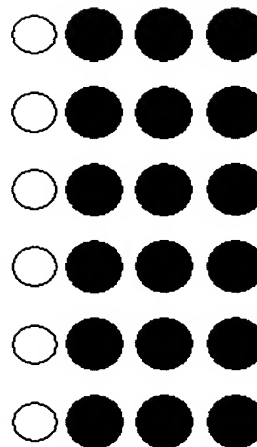


FIG-3E



Atomic Layer Exchange For 5 EOT Gate Dielectric

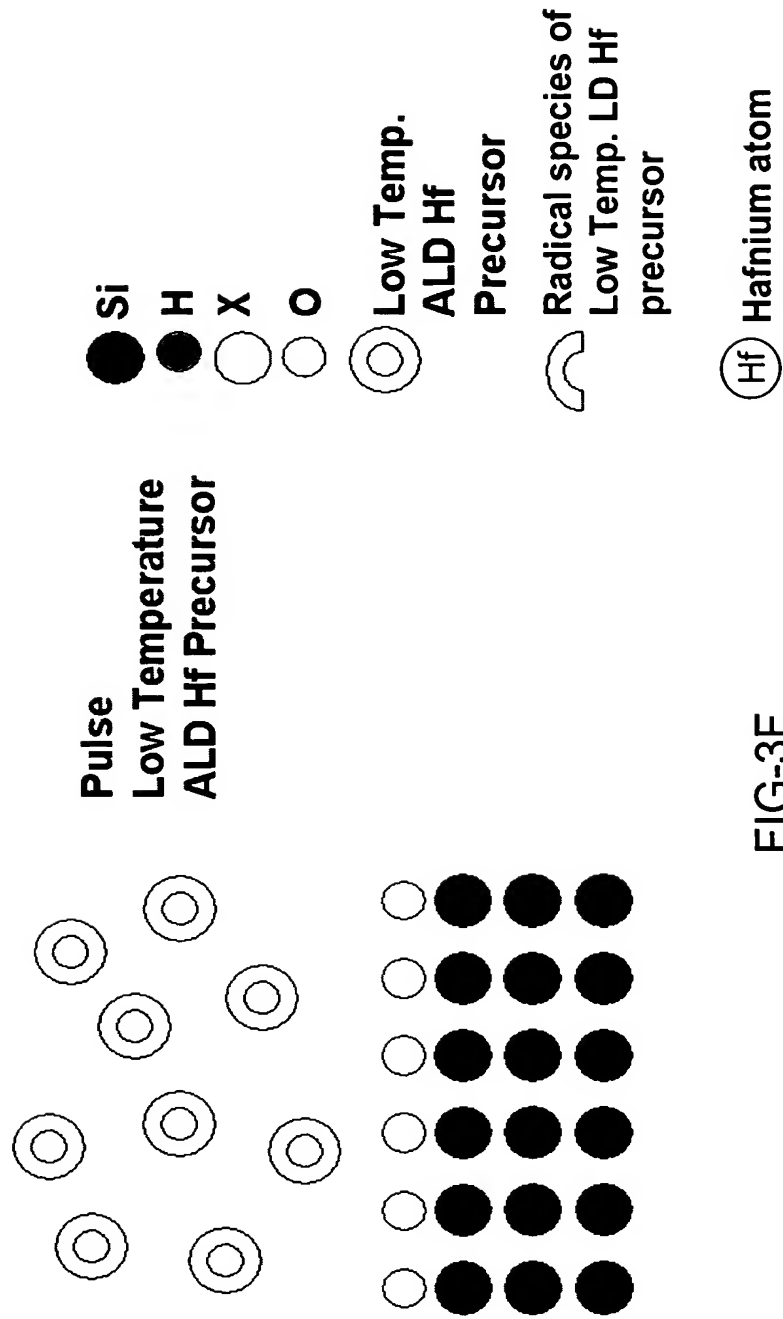


FIG-3F

Atomic Layer Exchange For 5 EOT Gate Dielectric

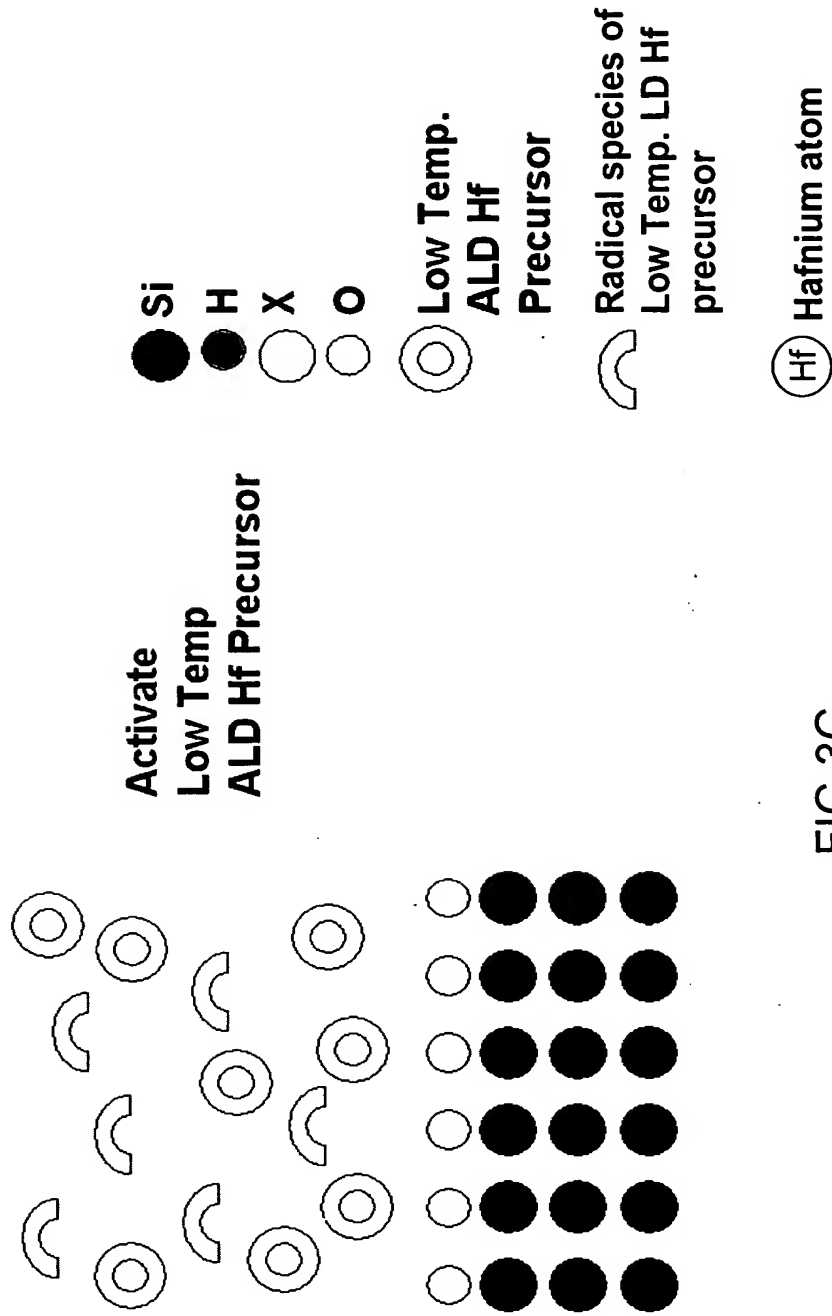


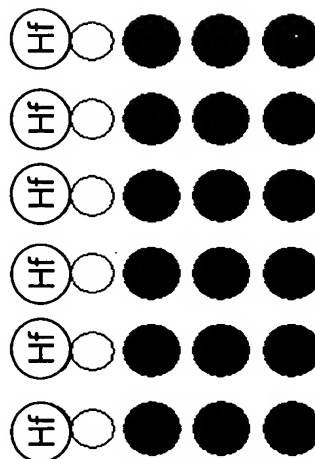
FIG-3G



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Atomic Layer Exchange For 5 EOT Gate Dielectric

ALD Reaction
and
Ar Purge



Low Temp.
ALD Hf
Precursor



FIG-3H



Atomic Layer Exchange For 5 EOT Gate Dielectric

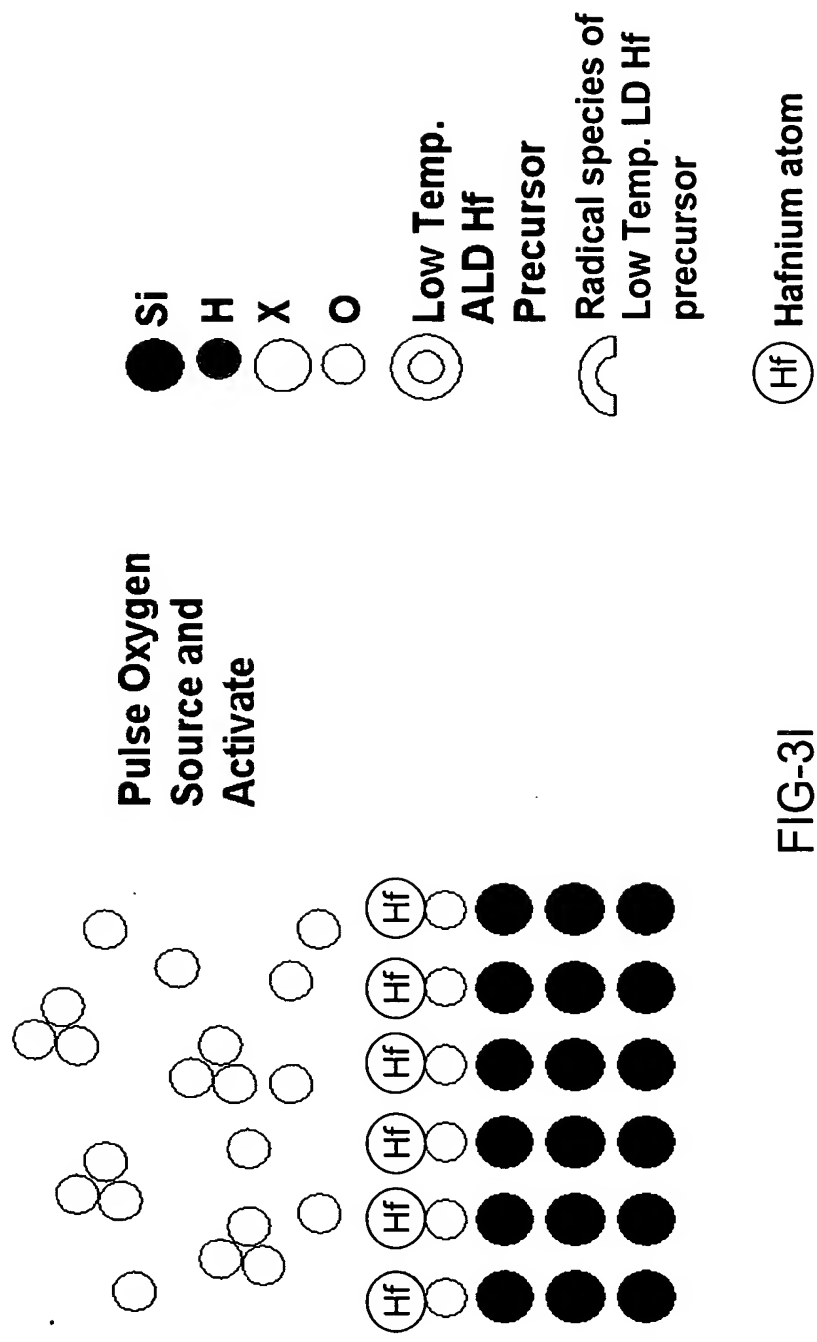


FIG-3I

Atomic Layer Exchange For 5 EOT Gate Dielectric



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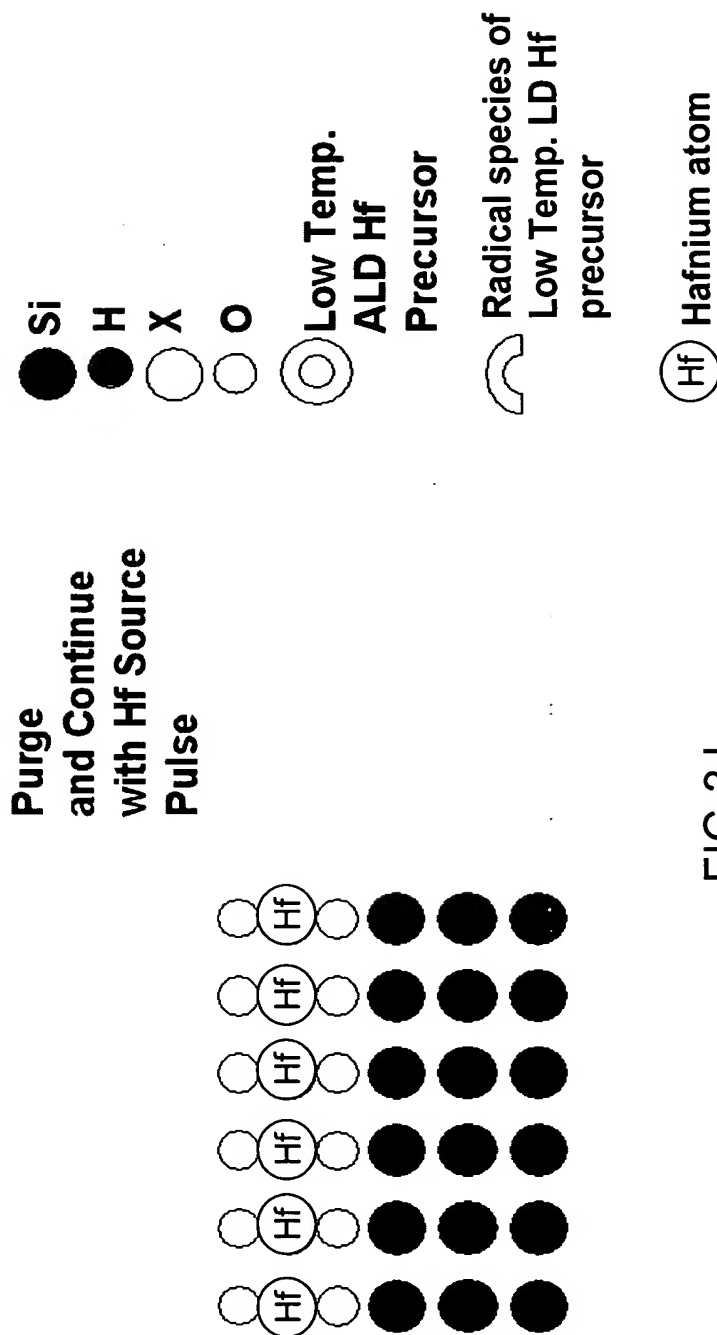


FIG-3J